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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,458	08/27/2003	Thomas Roehr	14580/024001	7122

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EXAMINER

NGUYEN, HIEP T

ART UNIT PAPER NUMBER

2187

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/650,458

Applicant(s)

ROEHR ET AL.

Examiner

Hiep T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/24/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-8 are presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 4 and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Sikes et al., U.S. Patent No. 6,249,841 [hereafter, Sikes].

(a) As per claim 1: Sikes teaches a data storage device (14) comprising:

- i. A controller (34),
- ii. A first non-volatile memory unit (32), a second non-volatile memory unit (30), and
- iii. A data interface [DQ0-DQ7; figure 1],
- iv. Wherein the controller being arranged upon the device receiving through the data interface for storage, to store the data in the first non-volatile memory unit, and subsequent to transfer the data in the second non-volatile memory unit [col. 4, lines 34-65; figure 2].

(b) As per claim 2: Sikes further teaches that his first non-volatile memory is an FeRAM memory unit [see again figure 2].

(c) As per claim 4: Sikes further teaches that his second non-volatile memory unit is a flash memory unit [see again figure 2].

(d) As per claim 7: the further claimed limitation of "the controller is arranged, in responsive to a read signal, to extract data from the second non-volatile memory unit and transmit it out of the data storage device" appears to be inherent in the Sikes system. This is because his first non-volatile memory is designated as a write buffer.

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- (e) As per claim 8: the further claimed limitation is also taught by Sikes [see figure 2 and col. 4, lines 11-13].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. Claims 3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sikes as applied to claim 1 above and further in view of well known features of which Official Notice is hereby taken.
- (a) As per claim 3:
- i. Sikes teaches a device as mentioned in the rejection of claim 1.
 - ii. Sikes however, does not teaches that his first non-volatile memory unit is an MRAM memory unit.
 - iii. A non-volatile magnetic RAM (MRAM) has also been known and commonly used in the pertinent art. One having ordinary skill in the art would readily recognize that interchange between a FeRAM and an MRAM is no more than a matter of choice. The tradeoff between the FeRAM and MRAM would be within the level of ordinary skill in the art.
 - iv. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the Sikes FeRAM with a MRAM simply because it is no more than selecting a commonly used memory device which is readily available in the market.

- (b) As per claim 5-6:


- i. Sikes teaches a memory device as mentioned above.
- ii. Sikes however, does not teaches the operation of determining whether the unused capacity of the first non-volatile memory unit is sufficient to store the received data so as to whether discarding the received data or directly writing the received data to the second non-volatile memory.
- iii. Using a cache or a memory buffer that has a storage capacity different from a sector size of a flash memory has also been known. Furthermore, such as memory has a limited memory space. Furthermore, there have been known many ways to handle a write operation in which the available memory space in the cache or buffer is insufficient to store the received data. Discarding the data and /or waiting until the cache/buffer space is available or directly writing the received data to a lower level memory in a memory hierarchy have been commonly practiced in the pertinent art.
- iv. Accordingly, it would have been obvious to one having ordinary skill in the pertinent art to employ, in the place of the Sikes first non-volatile memory, a buffer having a capacity other than the sector size of the second non-volatile memory. Furthermore, one having ordinary skill in the art to further configure the Sikes controller to either discard the received data or directly write the received data to the second non-volatile memory in case the available memory space in the first memory is insufficient to store the received data.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
 - (a) Rudelic, US2004/0123033, teaches a flash memory device having a cache memory integrated therein.
 - (b) Harrari, et al., US2004/0080988, teaches a cache memory for storing data to be written into a flash memory device.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hiep T. Nguyen whose telephone number is (571) 272-4197. The examiner can normally be reached on Monday-Friday from 9:30 am to 6:00 pm.
8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Hiep T Nguyen
Primary Examiner
Art Unit 2187

HTN